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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,486	04/18/2002	Timothy P. Weihs	13631-2A	7867

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EXAMINER

PIZIALI, ANDREW T

ART UNIT	PAPER NUMBER
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1775

4

DATE MAILED: 09/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-4

Office Action Summary

Application No.

09/846,486

Applicant(s)

WEIHS ET AL.

Examiner

Andrew T Piziali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-43 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Groups

1. Claims 19-21, drawn to a reactive multi-layer foil, classified in class 428, subclass 450.
2. Claims 32-33, drawn to a composite reactive multi-layer foil, classified in class 428, subclass 220.
3. Claim 34, drawn to a reactive multi-layer foil, classified in class 428, subclass 469.
4. Claim 26-31 and 43, drawn to a method for bonding a first body to a second body and the bonded structure, classified in class 428, subclass 53.
5. Claims 1-12, drawn to a method of making a freestanding reactive multi-layer foil, classified in class 427, subclass 250. 204/192.1
6. Claims 13-18 and 40-42, drawn to a method of bonding a first body to a second body, classified in class 228, subclass 2.5.
7. Claims 22-25, drawn to a method of making a reactive multi-layer foil, classified in class 427, subclass 208.2.
8. Claim 35, drawn to a method of connecting a semiconductor or microelectronic device to a substrate, classified in class 228, subclass 179.1.
9. Claims 36-39, drawn to a method for bonding a first body to a second body, classified in class 228, subclass 2.5.

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The inventions are distinct, each from the other because of the following reasons:

2. Inventions of Group 1 and Group 4 are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a reactive multi-layer foil in a bonded structure comprising a first body and second body which is bonded to the first body by the foil, in which no meltable joining material is present. The inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. Inventions of Groups 1, 2 and 3 are unrelated. Group 1 is drawn to a foil comprising alternating layers that react exothermically. Group 2 is drawn to a foil comprising at least a first set of reactive layers and at least a second set of reactive layers. Group 3 is drawn to a foil comprising a first region composed of layers that react exothermically and at least one second region which is nonconductive. The particulars of one Group are not required for any of the other Groups.

4. The invention of Group 4 is unrelated to the inventions of any one of Groups 1, 2 or 3. Group 4 is drawn to a method of bonding a first body to a second body. Groups 1, 2 and 3 are

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drawn to reactive multi-layer foil. The method of claim 4 does not make the article of any one of Groups 1, 2 or 3.

5. Inventions of Group 1 and Group 5 are unrelated. The method of Group 5 does not produce the foil with openings of Group 1.

6. The invention of Group 1 is not related to the invention of any one of Groups 6, 8 or 9. The invention of Group 1 is drawn to a reactive multi-layer foil, while the inventions of Groups 6, 8 or 9 are drawn to a method of bonding a first body to a second body. The methods of Groups 6, 8 and 9 do not produce the article of Group 1.

7. Inventions of Group 7 and Group 1 are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process. Regardless of the species election of Group 7, the product can be made by one of the non-elected embodiments.

8. Inventions of Groups 2, 3 and 4 are unrelated. Group 2 is drawn to a foil comprising at least a first set of reactive layers and at least a second set of reactive layers. Group 3 is drawn to a foil comprising at least one first region composed of layers that react exothermically and at least one second region which is nonconductive. Group 4 is drawn a completely different article, which is bonded structure. The particulars of one Group are not required for any of the other Groups.

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9. The invention of Group 2 is not related to the invention of any one of Groups 5-9. The methods of Group 6, 8 or 9 do not make the article of Group 2.
10. The invention of Group 3 is not related to the invention of any one of Groups 5-9. The methods of Group 6, 8 or 9 do not make the article of Group 3.
11. The invention of Group 5 is unrelated to any one of the inventions of Groups 4, 6, 8 or 9. Group 5 is drawn to a method of making a reactive multi-layer foil. Groups 4, 6, 8 and 9 are drawn to a method of bonding a first body to a second body.
12. Inventions of Group 6 and Group 4 are unrelated. Group 6 is drawn to a method of bonding comprising the step of disposing between a first and second body a freestanding foil. Group 4 is drawn to a method of bonding comprising a step of disposing between a first and second body at least one meltable joining material. The particulars of one group are not required by the other group.
13. The invention of Group 7 is unrelated to any one of the inventions of Groups 4, 6, 8 or 9. Group 7 is drawn to a method of making a reactive multi-layer foil. Groups 4, 6, 8 and 9 are drawn to a method of bonding a first body to a second body.
14. Inventions of Group 4 and Group 8 are unrelated. Group 4 is drawn to a method of bonding comprising a step of disposing between a first and second body at least one meltable joining material. Group 8 is drawn to a method of connecting a semiconductor or microelectronic device to a substrate comprising a step of disposing between the device and the substrate one or more first reactive regions and one or more non-conductive second regions. The particulars of one group are not required by the other group.

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15. Inventions of Group 4 and Group 9 are unrelated. Group 4 is drawn to a method of bonding comprising a step of disposing between a first and second body at least one meltable joining material. Group 9 is drawn to a method of bonding a first body to a second body comprising disposing between the first and second body a foil comprising a plurality of successive exothermic reactive layers that react to form a joining material. The particulars of one group are not required by the other group.

16. The invention of Group 4 is not related to the invention of any one of Groups 5 or 7. The invention of Group 4 is drawn to a bonded structure comprising a first body and a second body, while the invention of Groups 5 and 7 are drawn to a method of making a reactive multi-layer foil. The methods of Groups 5 and 7 do not make the article of Group 4.

17. The invention of Group 4 does not relate to any one of Groups 6, 8 or 9. The article of Group 4 is drawn to a bonded structure with a reacted multi-layer structure including a periodic array of openings and embedded in a matrix of meltable joining material. The methods of Groups 6, 8 and 9 do not produce the article of Group 4.

18. Inventions of Group 5 and Group 7 are unrelated. The inventions are unrelated because Group 5 is drawn to a method comprising the deposition of a plurality of alternating layers by vapor deposition, while Group 7 is drawn to a method of making a foil comprising openings or holes. The particulars of one Group are not required for the other.

19. Inventions of Group 6 and Group 8 are unrelated. Group 6 is drawn to a method of bonding comprising the step of disposing between a first and second body a freestanding foil. Group 8 is drawn to a method of connecting a semiconductor or microelectronic device to a substrate comprising a step of disposing between the device and the substrate one of more first

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reactive regions and one or more non-conductive second regions. The particulars of one group are not required by the other group.

20. Inventions of Group 6 and Group 9 are unrelated. Group 6 is drawn to a method of bonding comprising the step of disposing between a first and second body a freestanding foil. Group 9 is drawn to a method of bonding a first body to a second body comprising disposing between the first and second body a foil comprising a plurality of successive exothermic reactive layers that react to form a joining material. The particulars of one group are not required by the other group.

21. Inventions of Group 8 and Group 9 are unrelated. Group 8 is drawn to a method of connecting a semiconductor or microelectronic device to a substrate comprising a step of disposing between the device and the substrate one of more first reactive regions and one or more non-conductive second regions. Group 9 is drawn to a method of bonding a first body to a second body comprising disposing between the first and second body a foil comprising a plurality of successive exothermic reactive layers that react to form a joining material. The particulars of one group are not required by the other group.

22. Because these inventions are distinct for the reasons given above and because they have either acquired a separate status in the art, as shown by their different classification, or the search required for any one Group is not required for another Group, restriction for examination purposes as indicated is proper.

23. Group 2 further contains claims directed to the following patentably distinct species of the claimed invention:

Species 1 Claim 32, drawn to a composite reactive multi-layer foil comprising at least one second set of reactive layers in thermal contact with the first set, the layers of the first set having a thicknesses which are relatively larger than those of the second set.

Species 2 Claim 33, drawn to a composite reactive multi-layer foil comprising a second set of reactive layers in thermal contact with the first set, the layers of the first set having compositions which are relatively more reactive than those of the second set.

24. Group 7 further contains claims directed to the following patentably distinct species of the claimed invention:

Species 1 Claim 22, drawn to a method of making a reactive multi-layer foil with holes comprising the step of providing a substrate having a surface including a plurality of preformed openings, bumps, or particles .

Species 2 Claim 23, drawn to a method of making a reactive multi-layer foil with holes comprising the steps of depositing a masking layer on top of a reactive foil, patterning the masking mask with a plurality of holes and etching the reactive foil through the holes.

Species 3 Claim 24, drawn to a method of making a reactive multi-layer foil with holes comprising the step of mechanically pressing a plurality of holes into a reactive foil.

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25. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, if either Group 2 or 7 is elected, for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

26. Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

27. Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

28. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

29. A telephone call was made to Glenn E. Books on 9/18/02 to request an oral election to the above restriction requirement, but did not result in an election being made.

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Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement may be traversed (37 CFR 1.143).

30. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T Piziali whose telephone number is (703) 306-0145. The examiner can normally be reached on Monday-Friday (8:00-4:30).

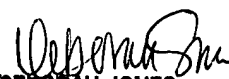
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5665.



atp
September 18, 2002

Andrew T Piziali
Examiner
Art Unit 1775



DEBORAH JONES
SUPERVISORY PATENT EXAMINER
SUPERVISORY PATENT EXAMINER